



भारतीय कृषि अनुसंधान परिषद
उत्तर पूर्वी पर्वतीय कृषि अनुसन्धान संस्थान
उमरोई रोड, उमियम (बड़ा पानी)
मेघालय

INDIAN COUNCIL OF AGRICULTURAL RESEARCH
ICAR Research Complex for NEH Region
Umroi Road, Umiam-793 103, Meghalaya



Tel.No. 2570572
FAX No. 2570355

No. RC(S) 17/2012

Dated the 24th February'2012.

Sealed bids are invited for procurement / construction of Temperature Controlled Green House from the reputed registered firms/ manufacturers/ authorized dealers by ICAR Research Complex for N.E.H. Region, Umroi Road, Umiam, Meghalaya. Detailed specifications of the equipments / instruments & terms & conditions, etc are given below:-

1. **The Cost of Tender paper of Rs.1,000.00 only**(Non – refundable) to be deposited in the favour of the Director, ICAR Research Complex for NEH Region, Barapani by Non – submission of the cost of Tender paper shall lead to non – consideration of the Tender.
2. **Separate quotations must be submitted for individual items.** Every quotation should consist of two Bids- The techno-commercial bid (Bid 'I') and the financial bid (Bid 'II'). Both must be submitted in two separate envelopes to be sealed **and put in a single main cover. The outer main cover should be super scribed "TENDER NO. RC(S) 17/2012 dated 24th February'2012 FOR PROCUREMENT OF Temperature Controlled Green House, under the National Fund Project on Phenomics, I.C.A.R RESEARCH COMPLEX, UMIAM"** and addressed to "THE DIRECTOR, ICAR RESEARCH COMPLEX FOR NEH REGION UMIAM, MEGHALAYA-793103". The Bidding Firm should give their complete address on the bottom left corner of the Main Cover. **The Cost of the Tender as well as the Earnest Money along with all other Technical Details should be mandatory kept in the Technical Bid only.** The Financial Bid should consist of the Rates, their detailed break –ups, etc. Non-compliance of this shall lead to non-consideration of the Bid. All Tenders should be sent by Registered Post. Tenders to be hand delivered should be put in the Tender box, kept in the AAO(S) Office of the ICAR Research Complex for NEH Region, Umiam, Meghalaya-793103 not later than **12:30 P.M. on 16th March', 2012.** Tenders received after the due date and time shall not be considered under any circumstances.
3. **The rates quoted should be up to ICAR Research Complex for NEH Region, Umiam, Meghalaya, (as per the details) for the mentioned items.** The rates must be valid for at least for 6(six) months from the date of quotation.
4. **Price quoted must be given per unit and must be all inclusive, including packing, forwarding, Delivery charges, Taxes, VAT etc., as may be applicable.**
5. Attested copy of the up to date sales tax and income tax clearance certificate (if any) from the authority concerned should be submitted with the quotation.
6. Furnishing of related documents like detailed specifications, technical literature, brand name, model and make, catalogue, authorization letter, Dealership Certificate, price list (if any) etc. is mandatory, failing which the quotation shall not be considered. Dealership certificate/Agency Certificate for the manufacturer/ manufacturing firm should be enclosed if the rates are quoted by the Dealers/Agents.
7. **The supply is effected at DGS&D rate contract, wherever is applicable.** The rate should be quoted for list of items as per the tender document.
8. The Buyer shall not be responsible for payment of transit insurance charges.

9. Payment shall be made on actual delivery in good condition and successful installation and demonstration (which should be free of cost and must be completed before payment).
10. **(a) In case of imported goods, the price may be quoted in foreign currency and import will be on FOB basis.** However, custom clearance, Inland freight etc. will be the responsibility of the supplier and no separate charges will be paid for that, however, custom duty exemption certificate shall be provided. The supplier should inform well in advance for sending these papers. No demurrage charges will be paid. If the supplier desires, rate in corresponding Indian currency may be quoted. It will be at the discretion of the authority of ICAR Research Complex for NEH Region to accept Indian or Foreign currency prices.
 - (b) In case of any custom duty charge, applicable as per Govt. of India's Notification, the same may be paid by the firm which will be reimbursed to the Indian Agent (who should be a registered firm and with DGS&D) immediately, subject to the condition that the bill of entry in original along with all relevant papers are submitted immediately, after custom clearance and installation and demonstration of the items. Installation and demonstration should be free of cost.
 - (c) **The import & payment will be made by means of Foreign Bank Draft/ Site Draft in case of foreign imported goods.** Performance Bank guarantee of 10% FOB value valid till the end of warranty period should be submitted before the release of the security deposit. All bank charges out side and inside India shall go to the beneficiary's account. Performance bank guarantee of 10% FOB value, valid till the end of warranty period, should be submitted before the release of the security deposit. All bank charges outside and inside India shall go to the beneficiary's account. Draft making charges would go to the beneficiary's account and a scanned copy of the draft, if required, can be sent to the Indian agent by post. Draft would be handed over after successful installation and demonstration which should be completed within 45 days from the date of draft and submission of all documents like bill of entry etc.
 - d) All imported items should be delivered up to destination i.e. all the import should be free of inland freight charges, insurance etc.
 - e) **Indian Agency Commission rate and amount should be clearly specified as per rules. IAC, wherever applicable, will be paid in Indian Currency only.**
 - f) In case of delay in supply, penalty will be imposed @2% per week, subject to a maximum of 10% of the FOB value
 - g) Indian Agents quoting on behalf of their principal must be registered firms with DGS&D .They are also requested to provide necessary authorization letter from their principal along with the quotation.
- 11. ICAR Research Complex for NEH Region, Umiam, Meghalaya, being a Scientific and Research Organization, is exempted from payment of Excise Duty (Certificate to this effect will be provided).**
11. All Bidders should mandatory give their current & other Bank A/C details to enable the office for releasing the dues via e- payment basis.
12. **The tenderers** [except those who are registered with the Central Purchase Organization & National Small Industries Corporation (proof should be mandatory enclosed)] **shall have to deposit 2.5% of the quoted amount** (for indigenious as well as for foreign items quoted in foreign currency, equivalent Indian currency may be deposited) **in the form of Demand Draft/ Banker's Cheque/ Bank Guarantee, valid for 6 (Six) months, drawn in favour of the Director, ICAR Research Complex for NEH Region, Umiam, Meghalaya, payable at Barapani, as a bid security, along with the quotation. Non**

- submission of the Bid Security with quotation shall make the quotation/ bid liable to be rejected.**
13. Performance Bank Guarantee is required for all indigenous items also. For items less than Rs.50, 000, the amount should be 5% of the actual cost of the equipment and for items more than 50,000.00 the amount should be 10% of the actual cost of the equipment. The bank guarantee should cover the entire guarantee/ warranty period which should be of at least one year duration.
 14. The selected tenderers must complete the supply/ installation/ demonstration within the stipulated time limit mentioned in the supply order. In case, the firm fails to execute the supply within the time limit, the bid security would stand forfeited and supply order shall be cancelled.
 15. The guarantee/ warrantee should be from the date of installation. All guarantee/ warranty services should be attended within a maximum limit of 15 days, failing which, proportionate deductions from the security deposit may be made at the discretion of the Institute.
 16. The Firm/ Agency run by the Non-Tribal should produce Trading Licence issued by the KHADC at the time of awarding the Contract.
 17. The complete details regarding the Institutions/ Corporations/ Bodies, etc. where the Firm/ Dealer has made the supplies during the last 2/3 years should also be furnished, along with the supply orders.
 18. The Bidders should mandatory provide their full Bank Details, so as to ensure e-payment to them directly o satisfactory completion of the Supply.
 19. The Director, ICAR Research Complex reserves the right to reject any tender in part or full, without assigning any reason thereof.
 20. Legal jurisdiction for all disputes shall be within the purview of the Shillong Court.
 21. **All bidders shall give an undertaking that they fully and unconditionally agree to abide by all the terms and conditions which, if needed, may be modified at the discretion of the Competent Authority, in supply order, for which confirmation from the supplier shall be taken. Non submission of the undertaking may lead to rejection/ non-consideration of the tender.**
 22. **The bidders should mandatory sign on every page of the Tender Document, which would show their unconditional acceptance of all the terms and conditions of the Tender Document.**
 23. Tenders shall be opened on 16th March' 2012 at 1 p.m. at the ICAR Research Complex for NEH Region, Umiam, Meghalaya. Interested bidders may attend the opening.
 24. Other terms & conditions, as may be decided by the Competent Authority from time to time, depending upon the condition & requirement of the supply. The intimation in this regard, shall be provided well in advance & the bidder/ supplier shall be bound by the said terms & conditions.
 25. For any query/ clarification, the undersigned may be approached at:
Contact No.: 0364-2570355 (Tel- Fax)
E-mail : aoicarneh@gmail.com

Sd/-S. K. Jindal
Administrative Officer

Specifications for Climate controlled green house:

Specifications for Climate controlled green house :

Features	Dimensions	Units
Total Covered Area of Hi-Tech Greenhouses	The Total Covered Area=280 sq. m. (20m x 14m) divided into two chambers each of size 10m. x 10m. With a front corridor of 20m x 4 m.	One
Side height	3m	
Centre height	4m.	
Shape	A - frame or circular arc of appropriate slope/radius of curvature Shape: Hut	

Sl. No.	Features	Technical Specifications	UNITS/ AREA
1)	Infrastructure Details	<p>A) All Structures, Rafters, Perlins, Trusses are hot dip galvanized and design to take a wind load up to 120 km/h.</p> <p><u>Specification:</u></p> <p>Hot dip galvanized Steel Structure: Using galvanized tubular structure or equivalent sections.</p> <p>1) Pipe sections to be used for different Structural Member will be as below or equivalent :</p> <p>a) Columns: 80 mm x 50 mm</p> <p>b) Trusses: Bottom cord 42 mm x 2mm; Truss Members 48mm x 48mm Bracing 25 NB, B-class GI steel pipe; structural member will be fitted with zinc plated nuts & bolts without welding.</p> <p>c) Purlins: using specially designed profile 32 mm x2mm thick.</p> <p>2) Nuts and other metallic parts: Includes all the elements required for joining and water tightens components (such as fittings, clamps, screws and nuts plated against corrosion).</p> <p>3) Two of the compartments of the greenhouse are to be furnished with tables (two tables of size 1.5m x 11.0m and two of size 1.5m x 10.0m in each compartment) of appropriate quality and height to keep pot-grown plants.</p>	Complete set
2)	Front	This corridor is meant for materials movement and will	1 no.

	corridor	<p>be located in front of the compartments. The corridor measuring 2m width and 20 m in length will have controlled temperature (22 - 25°C)</p> <p>a) Doors- The corridor will have two doors (1.5m wide), one each opening into the two compartments of the green house and one central door (2.0m wide) opening to outside. The doors should be paneled with clear 6mm polycarbonate glazing, top & bottom tracks, jambs, flashings & installation hardware. The doors should have manual lock and key system. Besides the electronic access system should be provided at the main entrance of the corridor. The main entrance should also have air curtain.</p>	
3)	Cladding System	The Complete Roof, Side Walls, End Walls of greenhouse and corridor area should be covered by 8 mm thick double walled DL-Sheet Euro with gasket for sides & roof with false ceiling.	1 Complete Set
4)	Lighting arrangement	<p>Metal HalideLamps</p> <p>Good quality ISI marked or better specifications; required number of spectra lamps to provide 1100 micromoles per sqm/sec covering whole range of photo synthetically active radiations and distributed uniformly across the entire green house space.</p>	One complete set for each compartment
5)	Cooling / Heating & Humidity System	<p>The green house should have climate control system to maintain temperature programmable in sinusoidal form in the range of 4°C to 30°C during winter and 15°C to 45°C during summer under Umiam conditions, Humidifiers to be provided for raising humidity 80%±5% inside the chambers.</p>	One complete set for each compartment
6)	Control System	<p>Micro processor based Programmable Control system with provision of sensing, regulating, recording and data logging of light, temperature, humidity and CO₂ conditions in real time.</p> <p>A) LIGHT CONTROL:</p> <p>1) Programming and control: Independent level programming to setup day/night programming.</p> <p>2) Lamps: Balanced spectrum for plant growth using fluorescent and incandescent lights to give 1100 micromoles/msq/s light intensity.</p> <p>B) TEMPERATURE CONTROL:</p> <p>1) Temperature Range: As desired temp. range as mentioned above.</p> <p>2) Temperature Control: +/- 0.5°C at control point.</p> <p>3) Temperature Safety Limits:</p> <p>a) Programmable High and Low temperature limits tracking alarm, automatically following programmed set point, in sinusoidal form.</p> <p>b) Independent, high and low temperature limits for secondary safety.</p> <p>c) Audible alarm for both safety devices and automatic chamber power off on reaching limits.</p> <p>C) HUMIDITY CONTROL</p> <p>1) Range: Up to 95% RH.</p>	One complete set for each compartment

		<p>2) Additive humidity Additive humidity should be siphon fed, atomizing spray nozzles.</p> <p>3) Control: +/- 3% RH.</p> <p>4) System: It should have wet bulb and dry bulb based sensor to directly measure % RH.</p> <p>The humidifying system should include de-ionized water production and supply from a single point source. The system should provide uniform humidity of required value in the green house and should not cause any deposition of water droplets on the floor or plant surface.</p> <p>D) There has to be proper air exchange system, so that proper air quality is maintained inside the green house. The system should be automatically operated based on CO₂ concentration inside the green house.</p> <p><u>COMPUTERIZED CONTROL PANEL:</u> Computerized control system to sense, control and monitoring the Light, Temp, R.H., and CO₂ conditions. computer hardware: In wall enclosure inclusive of:</p> <ul style="list-style-type: none"> * Membrane keyboard with LCD display mounted on the front of the wall enclosure. * Single board computer with 20 x an. In/40 x AC out. * Power supply for computer system and low voltage controls. * RS485/USB connection for I/O network and PC connection. * Alarm relay module with single alarm output. <p><u>Accessories:</u> 1 box with meter interface. 1 user manual in the English language.</p> <p><u>Server/PC with Office and Supervision for colour operator terminal functions:</u> The PC network consisting of one server/PC. A PC (to be supplied by Vendor) serves as colour operator terminal using the server/client functions. The server/ PC should be equipped with Office and Supervision for extended colour operator functions, using the server/functions of the OS. Via the PCs it should be possible to present settings, measurements and calculations of the Maximizer computer in alphanumerical and graphical form via the Office program and Supervision. Furthermore Office collects and stores the historical data of the Maximizer computer system. For this server/PC configuration the following should</p>	
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		<p>be included:</p> <p>1 box with Maximizer – PC interface board for connection of the Maximizer to a PC.</p> <p>1 cd-rom with basic program including:</p> <ul style="list-style-type: none"> - Supervision - communication with 1 Maximizer CPU for Supervision. - operator software for 1 PC's - operator software for 1 users simultaneously <p><u>Climate control software:</u></p> <p>Climate compartment with multi-day average radiation sum program to achieve an average ambient temperature during one or more 24-hour periods</p> <p>Measuring box, measuring and controlling of temperature and humidity</p> <p>Heating net control of 3-way modulating mixing valve and on/off controlled circulation pump</p> <p>Control of top vent motor (lee/wind side) based on running time</p> <p>Control of side vent motor based on running time</p> <p>Control program with temperature settings to start the fan system</p> <p>On/off control of exhaust fan step</p> <p>On/off switching air inlet control with input for safety contact to release the exhaust fan step</p> <p>Inside curtain control with shading/energy functions</p> <p>Control of misting pump</p> <p>Control of misting valve for humidification</p> <p>On/off control of air circulation fans</p>	
7)	<p>Fertigation Automation Nutrifit dosing unit (Centralised Control unit for both chambers)</p>	<p><u>Centralised Control unit for Fertigation Automation System, Nutrifit dosing unit:</u></p> <p>type : Nutrifit 12-25 AB.pH or equivalent.</p> <ul style="list-style-type: none"> - mixing tank system : content of approx 100 l net with overflow connection. - level protection : minimum level detection switch in mixing tank. - number of dosing channels: At least 2 for fertiliser on EC-value and 1 for acid on pH-value. - dosing valve and venturi: venturi with electrical quick action valve with venturi nozzle Ø2.7mm. - dosing capacity per channel: 30-300 litres/hour of fertiliser or acid solution at 3.0 Bar. - pump capacity net : 9.0 m³/hr net at 4.0 Bar. Or more 	1 Complete Unit

		<p>: 11.0 m³/hr net at 3.5 Bar or more</p> <p>- pump type : Grundfos CHI 12-25 or equivalent</p> <p>- EC measurement : 2 EC-sensors with thermistor element 3kΩ/25°C for temperature compensation of the EC-value.</p> <p>- pH measurement : 2 pH electrodes max. 10 bar, high pressure with coaxial cable 3 meters and BNC-connectors, holders for bayonet mounting.</p> <p>- dimensions inlet and outlet: water pressure operated inlet valve 2" with float bellow and PVC inlet Ø63 mm and outlet Ø50 mm.</p> <p>- frame construction : corrosion free materials.</p> <p>- electrical cabinet : manual switch, motor soft starter and thermal protection for pump.</p> <p>- integrated I/O-network materials:</p> <p>I/O-network functions built in:</p> <p>module for EC interface for connection of two EC sensors</p> <p>module for pH interface with two BNC connectors, suited for connection of two pH sensors</p> <p>Water system and litre counter measurement - 1 each</p>	
8)	Power Back-up	<p>There should be a sound proof power backup of required electrical load including water pump + 10% with automatic controls with a standby of equivalent capacity.</p> <p>The system should be installed with proper foundation, shading and enclosure.</p>	One complete set
9)	Civil work	<p>A) Foundation Wall for all sides of greenhouses WIDE BASED 4.0 ft below earth's surface and 3.5ft above earth's surface, as kick-board 9" wide. Frame base block height 4'. Floor height 2' from existing field surface.</p> <p>B) Pathways inside two of the green house compartments- Each side: 0.5m wide footpath and middle path of 1.0m width lengthwise inside each chamber of the greenhouse. Height of the path should be 25cm above the ground surface. Flooring should be with pre cast inter locking tiles suitably laid on firm base as per standard.</p>	One complete set

		<p>C) Floor in two of the compartments and in the front corridor: Kota stone flooring.</p> <p>D) External Pathways surrounding the structure:- 1.0m wide of standard cement concrete mixture.</p> <p>E) Drainage System: Facility will have a good drainage system.</p> <p>F) Water supply: Providing good quality four plastic tanks of 2000 Liters capacity each installed 2m above the ground on a platform. All the tanks should be inter-connected. They should have proper controlled inlet and outlets to supply water to the green house. A complete spread of conduit and PVC pipe distribution for irrigation in the plant growing area will be required. Development of a tube-well having casing of 15 cm (~ 350ft depth) fitted with submersible pump (KSB or equivalent make) of capacity suiting to the discharge capacity of the tubewell. Complete with electrical wiring and controls of good quality (ISI/ISO).</p> <p>G) Control room: A brick walled (9”), room of size 25ft x 15ft having tiled floor including wash room of size 8’ x 6’ with high quality sanitary fixtures and complete fitting for water and electricity supply. It should be climate controlled. The roofing material should be galvalume sheets (ribbed) with false ceiling.</p> <p>H) The whole structure area should be treated with anti termite chemicals. All civil work should meet CPWD norms.</p>	
10)	Electrical fittings:	<p>Electrical Wiring:- The bid should cover electrical cabling and fitting using appropriate gauge cable (having copper wire) from the electric sub-station inside the IARI campus (approx 500 meters from the site). High quality MCBs needed in electrical fitting to avoid any damage due to short circuit. Proper concealing should be provided around the cables and wherever electrical fitting will be there. Good quality ISI marked copper wires, switches, MCBs, connectors. Each fixture should have its own electric line with MCB and will be underground in PVC pipe complete set with A grade work. All electrical fittings must have rating and make meeting the CPWD norms. The electrical wiring and control switches should be of standard makes.</p>	One complete set